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Titan 400 Illuminator

Service Manual

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Titan 400 Xenon Illuminator Service Manual

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INTRODUCTION

This manual has been prepared to aid in the repair and maintenance of the Titan 400 Xenon Illuminators.

The procedures and instructions contained in this document are to be used by qualified technical personnel only. Some procedures may have live exposed circuitry and wiring which could be hazardous if contacted with. Use extreme caution when working on equipment that has power applied to it.

TECHNICAL SUPPORT SERVICES

In the event that you experience difficulty or need technical assistance, please contact our technical support staff at (877) 677-2832 or by fax at (904) 733-0012.

Please have the following information ready when you call:

- MODEL NUMBER
- SERIAL NUMBER
- DETAILED DESCRIPTION OF THE PROBLEM

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GENERAL THEORY OF OPERATION

The Titan 400 illuminator general operation is as follows. Please consult Fig. 1 for wiring information.

A.C. POWER DISTRIBUTION

The Titan 400 Xenon Illuminators are based around a universal input power supply. Input line voltages of 100-120V ~ and 220-240V ~ at 50/60 Hz are applied at the Power Input Model via a Hospital grade power cord. The input power is then filtered by a low leakage current EMI Filter. Over-current protection is provided by two 6 Amp circuit breakers. A single-pole interlock switch provides operator safety, which is located on the front side of the door.

DC POWER DISTRIBUTION

DC power for the other system components is generated by the lamp power supply. In addition to the 15 volts DC lamp power, it generates +12 VDC. The 12 VDC is used to power cooling fan and the elapsed lamp hour meter.

INTENSITY CONTROL

A rotating stainless steel disc that is placed in front of the lamp controls intensity. The disc contains holes in varying sizes and patterns. Manual lamp intensity control is made via a front panel mounted knob.

LAMP POWER AND IGNITION SYSTEM

The lamp used in the Titan Xenon Illuminators is a 400 watt ceramic arc lamp. For ignition of the lamp to occur, it takes a high voltage pulse of approximately 23 KV. The power supply generates a pulse of approximately 400-600 volts, which is then stepped up to the 23 KV pulse by the igniter module circuitry. Connection to the lamp is made via two banana jacks.

The lamp power and ignition system consists of the lamp power supply, lamp base assembly, and the lamp cartridge assembly. In the event you have a power supply failure, it is recommended that the power supply be returned to **SUNOPTICS TECHNOLOGIES®** for servicing. When power supply is switched on, the DC supplies come up to voltage immediately. The lamp power supply has a built in delay of 1 to 2 seconds before it will attempt to start the lamp. If the lamp is unsuccessful at igniting, the power supply will try 6 to 10 times in rapid succession before ceasing. After successful ignition, the supply switches to a 15 VDC output at approximately 27 amps of current.

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COOLING SYSTEM

Cooling is provided by a 86CFM, 12 VDC fan. Air is drawn through the sides of the unit, across the power supply and lamp, and exhausted through the rear mounted exhaust louver. An infrared filter which is located between the lamp lens and the lamp housing provides additional cooling of the light. This filter blocks the infra-red "heat" from the output turret while passing the visible light, thus lowering the temperature of the instruments and cables. Caution should still be used as there are still potentially hazardous temperatures at the turret.

PARTS REPLACEMENT PROCEDURES

The following procedures are meant to aid the technician/engineer in replacing defective or damaged components. These procedures are meant to be used by qualified personnel only. Extreme caution should be used and all necessary safety precautions taken when working on this equipment.

CIRCUIT BREAKER REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 11 cover screws on the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Using an ohmmeter, verify which circuit breaker is defective.
5. Remove the defective circuit breaker and replace with the new one.
6. Replace the top cover making sure the lamp access door is over the lamp cartridge.
7. Replace the 11 cover screws and secure.

SHUTTER REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 11 cover screws of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Remove the clip and belt.
5. Pull of the shutter assembly.
6. Replace the shutter assembly with the new one.
7. With the control turned fully clockwise, align the shutter in such a way that it does not cover the hole in the front panel. Replace the clip and belt.
8. Replace the top cover making sure the lamp access door is over the lamp cartridge.
9. Replace the 11 cover screws and secure.

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I.R. FILTER REPLACEMENT

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature. The lamp cartridge and IR filters operate at very high temperatures.

1. Disconnect the illuminator from the power source.
2. Open the lamp access door and remove the lamp, gently rocking from front to back. Set lamp aside.
3. Loosen the two bottom screws holding the IR filter by inserting a 10" Philips screwdriver through the fan guard in the back of the unit.
4. Slip the IR filter out and replace with the new filter ensuring that the new filter is clean and free of fingerprints. Note that the arrow on the side of the filter must point toward the lamp and the filter is off axis by approximately 15 degrees.
5. Re-tighten the lower two screws that secure the IR filter.
6. Place the unit back on its feet. Install the lamp, being sure it has totally seated, and close the access door.

POWER SUPPLY REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 11 cover screws in the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Disconnect the fan lead connector, the AC power input connectors, and the lamp output power wires from the power supply.
5. Set the unit on its side.
6. While holding the power supply with one hand, remove the 4 mounting screws from the bottom of the unit.
7. Place the new power supply in the unit so all 4 holes line up with the power supply standoffs. Secure with the 4 mounting screws from the bottom.
8. Place the unit back on its feet.
9. Reconnect the fan lead connector, the AC power input connectors, and the lamp output power wires to the power supply.
10. Replace the top cover making sure the lamp access door is over the lamp cartridge.
11. Replace the 11 cover screws and secure.

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COOLING FAN REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 11 cover screws in the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Disconnect the fan lead connector and the hour meter wiring harness connector from the power supply.
5. Remove the rivets holding the fan shroud to the housing. Lift fan shroud from unit and set aside.
6. Remove the fan mounting screws and nuts. This will free the fan louver also.
7. Replace the fan assembly with the airflow blowing out the back of the unit. The fan leads should be coming out of the fan at the tip and against the back panel.
8. Secure the fan mounting screws with the nuts.
9. Slide the Fan shroud into place and rivet the unit to the housing.
10. Reconnect the fan lead connector and the hour meter wiring harness connector to the power supply.
11. Replace the top cover making sure the lamp access door is over the lamp cartridge.
12. Replace the 11 cover screws and secure.

REPLACEMENT PARTS

DESCRIPTION

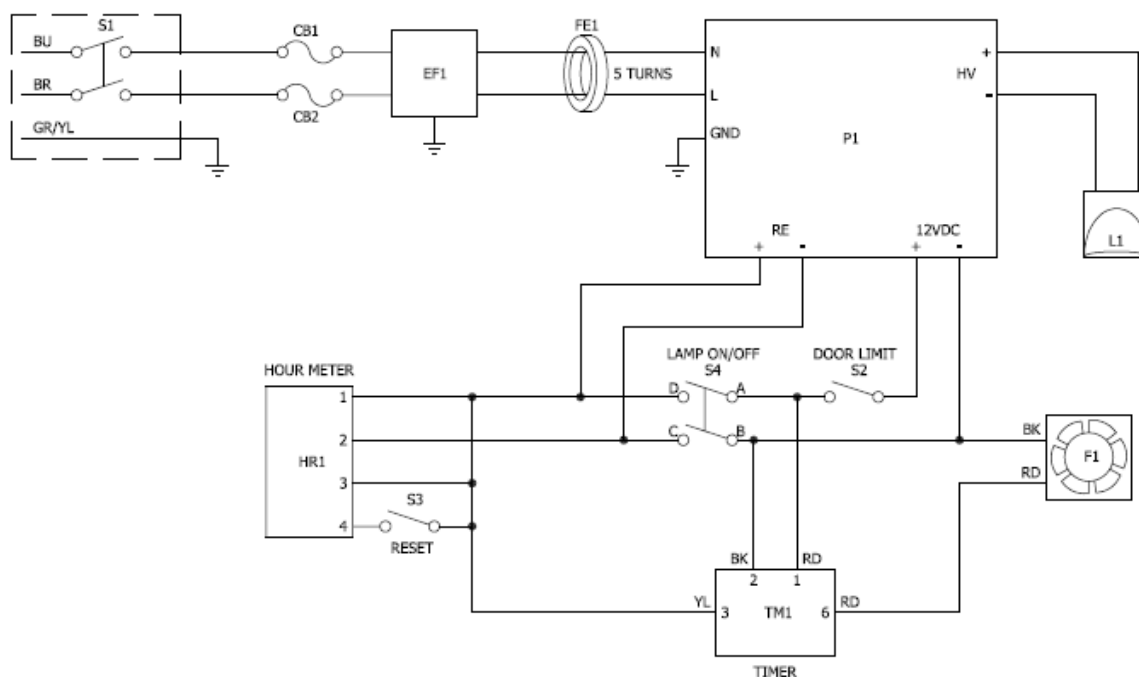
PART NUMBER

Replacement Lamp Module	I4009411-400W
EMI Filter	I4009402
400-Watt Xenon Power Supply	I4009405
Circuit Breaker	I4009403
IR Filter	I4009615
Power Input Module	I4009400
Shutter Assembly	SSX0086
Cooling Fan	I4009410

For parts not listed here, call our Technical Service Department listed at the front of the manual.

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FIGURE 1



Code	Part number	Description	qty
S1	I4009400	Input module power switch	1
CB1/CB2	I4009403	Circuit breaker	2
F2	I4009402	EMI filter	1
P1	I4009405	Power supply	1
S2	I1104000	Limit Switch	1
S3	I2000041	Reset switch	1
S4	I4009404	Lamp switch	1
F1	I4009410	Fan, 12 VDC	1
HR1	I2000012	Hour Meter	1
L1	I4009411-400W or I4009450	Xenon lamp Module	1
TMI	I4009424	Timer delay	1